

Claim 5, line 1; delete "characterized in that in a";
line 2, delete "speech and music signal coder".

Claim 6, line 4, delete "(N designates a natural number of 2 or";
line 5, delete "larger)".

[Please add the following new claims]

--25. A speech and music signal coding/decoding apparatus comprising:
a speech and music signal coder that produces a coded signal by driving a first
linear prediction synthesis filter in response to a first excitation signal which is provided by
adding a first signal corresponding to a first band of an input signal and a second signal
corresponding to a second band of the input signal, said linear prediction synthesis filter being
set with a linear prediction coefficient calculated on the basis of said input signal, said speech
and music signal coder comprising:

a reproduction signal generating circuit producing a reproduction signal by
driving the first linear prediction synthesis filter in response to the first signal
corresponding to the first band of the input signal;

a residual signal generating circuit generating a residual signal by driving
a linear prediction inverse filter in response to a differential signal indicative of a
difference between the first input signal and the reproduction signal; and

a coding circuit coding a component in correspondence with the residual
signal after orthogonal transformation of the component; and
a speech and music signal decoder that decodes the coded signal of the signal
coder by driving a second linear prediction synthesis filter in response to a second excitation
signal provided by adding a first signal corresponding to a first band of the second excitation
signal and a second signal corresponding to a second band of the second excitation signal, said
speech and music signal decoder comprising:

an excitation signal generating circuit generating the second signal
corresponding to the second band of the second excitation signal by subjecting a

decoding signal and an orthogonal transformation coefficient to orthogonal inverse transformation;

a second reproduction signal generating circuit generating a second reproduction signal by driving the second linear prediction synthesis filter in response to the second excitation signal;

a third reproduction signal generating circuit generating a third reproduction signal by driving the second linear prediction synthesis filter in response to the first signal corresponding to the first band of the second excitation signal; and

a speech and music decoded signal generating circuit generating a speech and music decoded signal by adding the second reproduction signal and the third reproduction signal.

26. A speech and music signal coding/decoding apparatus comprising:

a speech and music signal coder that produces a coded signal by driving a first linear prediction synthesis filter in response to a first excitation signal which is provided by adding 3 pieces of excitation signals in correspondence with 3 pieces of bands, said first linear prediction synthesis filter being set with a linear prediction coefficient calculated on the basis of an input signal, said speech and music signal coder comprising:

a first reproduction signal generating circuit generating a first and a second reproduction signal by driving the first linear prediction synthesis filter in response to the excitation signals in correspondence with a first one and a second one of the bands; and

a coding circuit generating a residual signal by driving a linear prediction inverse filter in response to a differential signal indicative of a difference between an added signal produced by adding the first and the second reproduction signals and the input signal and coding a component in correspondence with a third one of the bands in the residual signal after orthogonal transformation of the component; and

a speech and music signal decoder that decodes the coded signal of the signal coder by driving a second linear prediction synthesis filter in response to a second excitation signal provided by adding 3 pieces of excitation signals in correspondence with a first through a third band, said speech and music signal decoder comprising:

a second reproduction signal generating circuit generating a third and a fourth reproduction signal by driving the second linear prediction filter in response to the second excitation signals in correspondence with the first and the second bands;

a third reproduction signal generating circuit generating the second excitation signal in correspondence with the third band by subjecting a decoded orthogonal transformation coefficient to orthogonal inverse transformation, and generating a fifth reproduction signal by driving the second linear prediction synthesis filter in response to the second excitation signal; and

a speech and music decoded signal generating circuit generating a speech and music decoded signal by adding the third through the fifth reproduction signals.

27. A speech and music signal coding/decoding apparatus comprising:

a speech and music signal coder that produces a coded signal by driving a first linear prediction synthesis filter in response to a first excitation signal which is provided by adding N pieces of excitation signals in correspondence with N pieces of bands of an input signal, said speech and music signal coder comprising:

a first reproduction signal generating circuit generating a first through an (N-1)-th first reproduction signal by driving the first linear prediction synthesis filter in response to the first excitation signals in correspondence with a first through an (N-1)-th band; and

an N-th coding circuit generating a residual signal by driving a linear prediction inverse filter in response to a differential signal indicative of a difference between a signal produced by adding the first through the (N-1)-th first reproduction signals and the input signal and coding a component in

correspondence with an N-th band in the residual signal after orthogonal transformation of the component; and

a speech and music signal decoder that decodes the coded signal of the signal coder by driving a second linear prediction synthesis filter in response to a second excitation signal provided by adding N pieces of excitation signals in correspondence with first through an N-th band, said speech and music signal decoder comprising:

an N-th reproduction signal generating circuit generating a reproduction signal in correspondence with the N-th band by subjecting a decoded orthogonal transformation coefficient to orthogonal inverse transformation and generating an N-th reproduction signal by driving the second linear prediction synthesis filter in response to the second excitation signal;

a first through (N-1)-th second reproduction signal generating circuit generating a first through an (N-1)-th second reproduction signal by driving the second linear prediction synthesis filter in response to the second excitation signals in correspondence with the first through the (N-1)-th bands; and

a speech and music decoded signal generating circuit generating a speech and music decoded signal by adding the first through the (N-1)-th second reproduction signals.

28. A speech and music signal coding/decoding apparatus comprising:

a speech and music signal coder that produces a coded signal by driving a first linear prediction synthesis filter in response to a first excitation signal which is provided by adding 2 pieces of excitation signals in correspondence with 2 pieces of bands, said speech and music signal coder comprising:

a difference circuit calculating a difference of a first coded decoding signal and an input signal; and

a coding circuit generating a residual signal by driving a linear prediction inverse filter in response to the differential signal and coding a component in correspondence with an arbitrary one of the bands in the residual signal after subjecting the component to orthogonal transformation; and

a speech and music signal decoder that decodes the coded signal of the signal coder by driving a second linear prediction synthesis filter in response to a second excitation signal provided by adding excitation signals in correspondence with a first and a second band, said speech and music signal decoder comprising:

a reproduction signal generating circuit generating a first reproduction signal by subjecting a decoded orthogonal transformation coefficient to orthogonal inverse transformation and generating a second reproduction signal by driving a third linear prediction synthesis filter by the first reproduction signal; and

a speech and music decoded signal generating circuit generating a speech and music decoded signal by adding the second reproduction signal and the first reproduction signal from reproduction signal generating circuit.

29. A speech and music signal coding/decoding apparatus comprising:

a speech and music signal coder that produces a coded signal by driving a first linear prediction synthesis filter in response to an excitation signal provided by adding 3 pieces of excitation signals in correspondence with 3 pieces of bands of an input signal, said speech and music signal coder comprising:

a difference circuit calculating a differential signal indicative of difference between a signal produced by adding a first and a second coded decoding signal and the input signal; and

a coding circuit generating a residual signal by driving a linear prediction inverse filter calculated on the basis of the input signal and the differential signal, and coding a component in correspondence with an arbitrary band in the residual signal after orthogonal transformation of the component; and

a speech and music signal decoder that decodes the coded signal of the signal coder by driving a second linear prediction synthesis filter in response to a second excitation provided by adding excitation signals in correspondence with a first through a third band, said speech and music signal decoder comprising:

a first reproduction signal generating circuit generating a first reproduction signal by subjecting a decoded orthogonal transformation coefficient to orthogonal inverse transformation;

a second reproduction signal generating circuit generating a second reproduction signal by driving the second linear prediction synthesis filter in response to the first reproduction signal; and

a speech and music signal generating circuit generating a speech and music signal by adding the first and a second reproduction signals generated by the first and second reproduction signal generating circuit.

30. A speech and music signal coding/decoding apparatus comprising:

a speech and music signal coder that produces a coded signal by driving a first linear prediction synthesis filter in response to a first excitation signal which is provided by adding N pieces of excitation signals in correspondence with N pieces of bands of an input signal, said speech and music signal coder comprising:

a differential signal calculating circuit calculating a differential signal indicative of difference between a signal produced by adding a first through an (N-1)-th coded decoding signal and the input signal; and

an N-th coding circuit generating a residual signal by driving an inverse filter of the first linear prediction synthesis filter on the basis of the input signal in response the differential signal and coding a component in correspondence with an arbitrary band in the residual signal after orthogonal transformation of the component; and

a speech and music signal decoder that decodes the coded signal of the signal coder by driving a second linear prediction synthesis filter in response to a second excitation signal provided by adding N pieces of excitation signals in correspondence with a first through an N-th band; said speech and music signal decoder comprising:

an N-th reproduction signal generating circuit generating a first reproduction signal by subjecting a decoded orthogonal transformation coefficient to orthogonal inverse transformation and generating an N-th reproduction signal

by driving the second linear prediction synthesis filter in response to the first reproduction signal; and

a speech and music decoded signal generating circuit generating a speech and music decoded signal by adding the N-th reproduction signal and a first through an (N-1)-th reproduction signal.

31. A speech and music signal coding/decoding apparatus as claimed in claim 25, wherein:

the speech and music signal coder further comprises a first pitch prediction filter that generates the first signal corresponding to the first band of the input signal; and

the speech and music signal decoder further comprises a second pitch prediction filter that generates the first signal corresponding to the first band of the second excitation signal.

32. A speech and music signal coding/decoding apparatus comprising:

a speech and music signal coder comprising:

an input signal generating circuit generating an input signal by down-sampling a sampling signal sampled at a first sampling frequency to a second sampling frequency;

a first reproduction signal generating circuit generating a first reproduction signal by driving a synthesis filter set with a first linear prediction coefficient calculated on the basis of the input signal in response to a first excitation signal;

a second reproduction signal generating circuit generating a second reproduction signal by up-sampling the first reproduction signal to the first sampling frequency;

a linear prediction coefficient calculating circuit calculating a first linear prediction coefficient on the basis of a difference between a second linear prediction coefficient and a third linear prediction coefficient provided by converting a sampling frequency to the first sampling frequency;

a residual signal generating circuit calculating a fourth linear prediction coefficient on the basis of a sum of the third linear prediction coefficient and the

first linear prediction coefficient and generating a residual signal by driving an inverse filter set with a fourth linear prediction coefficient calculated on the basis of a differential signal indicative of difference between the sampling signal and the second reproduction signal; and

a coding circuit coding a component in correspondence with an arbitrary band in the residual signal after orthogonal transformation of the component; and a speech and music signal decoder comprising:

a third reproduction signal generating circuit up-sampling a signal provided by driving a second linear prediction synthesis filter in response to a second excitation signal in correspondence with a first band to a third sampling frequency and generating a third reproduction signal;

a fourth reproduction signal generating circuit generating a second excitation signal in correspondence with a second band by subjecting a decoded orthogonal transformation coefficient to orthogonal inverse transformation and generating a fourth reproduction signal by driving a third linear prediction synthesis filter in response to the second excitation signal; and

a speech and music decoded signal generating circuit generating a speech and music decoded signal by adding the third and the fourth reproduction signal.--